

**ECOLOGICAL CREEKS TAILINGS
REMOVAL ACTION WORK PLAN**

FINAL

**USAF Contract No. F41624-03-D-8609
D.O. No. 0214, CDRL A004, A005, and A007**

Prepared for:

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July 2006



DEPARTMENT OF THE AIR FORCE
AIR FORCE REAL PROPERTY AGENCY

JUL 06 2006

MEMORANDUM FOR SEE DISTRIBUTION

FROM: AFRPA Western Region Execution Center
3411 Olson Street
McClellan CA 95652-1003

OF
FA

SUBJECT: Final Creek Tailings Removal Action Work Plan/Field Sampling Plan
(DSR# 1254-5)

1. Attached is the Final Creek Tailings Removal Action Work Plan/Field Sampling Plan. The subject document has an assigned McClellan Deliverable Status Report (DSR) #1254-5, is categorized as a "removal" document, and is due on 7 July 2006.
2. This Removal Action Work Plan/Field Sampling Plan describes the work process that will be used to remove contaminated soil tailings piles along Magpie and Don Julio Creeks in the West Nature Area (WNA) of the former McClellan Air Force Base. The soil piles were created by a flood control operation performed by the Air Force in 1997, in which soil and sediment were dredged from the creeks and deposited in tailings piles along the upper creek banks. The primary objective of the removal action is to reduce exposures of ecological and human receptors to contaminants in the tailings piles by physically removing the piles.
3. Some of the tailings piles contain potentially elevated levels of radionuclides. The Air Force plans to conduct additional sampling of the piles prior to removal and to segregate the piles based on landfill disposal restrictions. The current plan is to move piles with radionuclides above action levels to the weatherization tent at CS 10. The Air Force Radioisotope Committee (RIC) has amended the permit for CS 10 to include receipt and storage of the tailings pile soils. Piles with radionuclide levels below the action levels will be moved to a separate holding area for temporary storage and subsequent disposal in an appropriately permitted landfill.
4. If you have any questions concerning this deliverable, please contact Molly Enloe at (916) 643-0830 ext 231.


STEVEN K. MAYER, P.E.
BRAC Environmental Coordinator

Attachment:
Final Creek Tailings Removal Action Work Plan/Field Sampling Plan

TABLE OF CONTENTS

	<u>Page</u>
ACRONYMS AND ABBREVIATIONS	v
EXECUTIVE SUMMARY.....	ES-1
1.0 INTRODUCTION	1-1
1.1 Removal Action Objectives	1-1
1.2 Work Plan Organization	1-1
2.0 SITE DESCRIPTION AND BACKGROUND	2-1
2.1 Site History	2-2
2.2 Previous Site Investigations	2-7
2.3 Nature and Extent of Contamination	2-8
3.0 SENSITIVE AREA REMOVAL PLAN	3-1
3.1 Pre-Mobilization Activities.....	3-1
3.1.1 Easements and Permitting.....	3-1
3.1.2 Air Force Notification.....	3-2
3.1.3 Sensitive Area Protection Plan.....	3-2
3.1.4 Erosion Control Plan.....	3-2
3.2 Mobilization.....	3-5
3.2.1 Access Control and Security Measures.....	3-5
3.2.2 Marking.....	3-5
3.2.3 Vegetation Removal.....	3-6
3.2.4 Pre-Excavation Sampling.....	3-6
3.2.5 Transportation Routes and Road Construction.....	3-13
3.2.6 Bridge Crossings.....	3-13
3.3 Decontamination Plan.....	3-19
3.3.1 Site Control Zones	3-20
3.3.2 Support Zone	3-20
3.3.3 Contamination Reduction Zone	3-20
3.3.4 Exclusion Zone	3-23
3.3.5 Radiological Controls	3-23
3.4 Excavation.....	3-25
3.4.1 Phased Construction.....	3-25
3.4.2 Specific Tailings Pile Removal Plan.....	3-26
3.4.3 Contamination Control.....	3-27
3.5 CS 10 Cell Construction	3-28
3.5.1 Filling Process.....	3-28
3.5.2 Staging Pile Inspections	3-29
4.0 POST-REMOVAL ACTIVITIES	4-1
4.1 Post-Removal Soil Sampling	4-1
4.2 Backfill Soil Sampling and Analyses.....	4-1
4.3 Restoration Plan	4-2
4.4 Revegetation Plan	4-2
4.5 Site Demobilization Plan	4-3

TABLE OF CONTENTS (Continued)

	<u>Page</u>
4.6 Excavated Soil Storage and Final Disposal	4-3
4.6.1 Temporary Storage at the CS 10 Weatherization Tent	4-3
4.6.2 Temporary Storage at the Non-Radiological Storage Area	4-3
5.0 REPORTING	5-1
6.0 REFERENCES	6-1

APPENDICES

- APPENDIX A: Field Sampling Plan
APPENDIX B: Health and Safety Plan
APPENDIX C: Construction Quality Plan
APPENDIX D: Bridge Foundation and Drainage Crossing Plan and Geotechnical Engineering Investigation Report
APPENDIX E: CS 10 Radioactive Material Permit, 29 June 2005

LIST OF TABLES

	<u>Page</u>
2-1 Non-Radiological Contaminants Exceeding Background Concentrations or PRGs in Tailings Pile or Adjacent Floodplain Samples at Don Julio Creek.....	2-8
2-2 Non-Radiological Contaminants Exceeding Background Concentrations or PRGs in Tailings Pile or Adjacent Floodplain Samples at Magpie Creek	2-9
2-3 Radiological Contaminants Exceeding Action Levels in Tailings Pile or Adjacent Floodplain Samples at Don Julio Creek.....	2-9
3-1 Sensitive Area and Tailings Pile Identification.....	3-6
3-2 Waste Categorization and Profiling Criteria for Non-Radiological Contaminants.....	3-7
3-3 Radiological Action Levels.....	3-9
3-4 Sample Matrix for Pre-Excavation Tailings Pile Sampling at Don Julio and Magpie Creeks ..	3-10
3-5 Recommended Maximum Radiological Contamination Guide for Items Given Radiation or Contamination Clearance (e.g., Tools and Equipment for Reissue)	3-14
3-6 Recommended Maximum Radiological Contamination Guide for Skin Surfaces.....	3-23
3-7 Scanning Instrumentation	3-24

LIST OF FIGURES

	<u>Page</u>
ES-1 Location of McClellan AFB	ES-3
ES-2 West Nature Area Creeks.....	ES-5
2-1 Don Julio Creek Tailings Piles and Access Roads.....	2-3
2-2 Magpie Creek Tailings Piles and Access Roads	2-5
2-3 Beaver Pond in the West Nature Area (Late Spring).....	2-2
2-4 Tailings Piles along Edges of Magpie Creek (October 1997).....	2-7
3-1 Site Map	3-3
3-2 Flow Diagram for Pre-Excavation Sampling and Temporary Storage	3-8
3-3 Magpie and Don Julio Creeks Proposed Pre-Excavation Sampling Locations	3-11
3-4 Transportation Route	3-15
3-5 Additional Available Storage, Long-Term Staging Pile Plan	3-17
3-6 Typical Railroad Flatbed Car Bridge	3-19
3-7 Typical Railroad Flatbed Car Bridge with Guardrails (Side View).....	3-19
3-8 Typical Railroad Flatbed Car Bridge with Guardrails (Top View)	3-20
3-9 Site Control Zones	3-21
3-10 John Deere (JD) Model 310	3-27
3-11 Ford F650 Dump Truck	3-28

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EXECUTIVE SUMMARY

This Removal Action Work Plan (RAWP) describes the work process that will be used to remove contaminated soil tailings piles along Magpie and Don Julio Creeks on the western side of the former McClellan Air Force Base (McClellan AFB) in the West Nature Area (WNA) (Figures ES-1 and ES-2). The tailings piles are the result of dredging activities conducted by the Air Force in October 1997 to reduce the possibility of flooding from the imminent El Niño storms. The dredged materials were piled along the banks of both of the creeks west of Patrol Road (Figure ES-2). Currently, the piles of dredged material are mostly overgrown with grasses and other weedy herbaceous species.

The Air Force Real Property Agency (AFRPA) has prepared a Draft Action Memorandum (AFRPA, 2005) for the West Nature Area Creeks at McClellan AFB, CA (Action Memorandum) to document the Air Force's decision to undertake a non-time-critical removal action (NTCRA) to remove contaminated tailings piles along the banks of Magpie Creek (Work Information Management System [WIMS] site SD165) and Don Julio Creek (WIMS site SD317) in the WNA. The primary objective of the NTCRA is to reduce exposures of human and ecological receptors to contaminants in the tailings piles by physically removing, as much as possible, 7,000 cubic yards (CY) of contaminated creeks tailings from the banks of Magpie Creek and Don Julio Creek in the WNA. The tailings piles cover a surface area of approximately 60,000 square feet (sq. ft.) in 62 separate piles. Additional objectives are to prevent the potential migration of contaminants in the tailings piles to the creeks in surface water runoff and to conduct the removal action in a way that reduces impacts to sensitive species and habitats. The following will be performed to meet this objective:

- Prepare a comprehensive work plan that includes a sensitive area protection plan, site restoration plan, erosion control plan, and decontamination plan;
- Establish engineering and administrative controls to enforce plan requirements;
- Define the location of the piles using a global positioning system (GPS) and visual observations;
- Collect pre-removal tailings pile samples for waste segregation;
- Build temporary roads and bridges to access tailings piles;
- Begin the tailings removal after nesting ends in June, and complete all tasks before the rainy season begins in November;
- Remove identified tailings plus an additional 1 foot of soil beneath each pile to the extent that sensitive habitats and species are not impacted;
- Transport the excavated material to the Confirmed Site (CS) 10 weatherization tent or non-radiological soil storage area (if radionuclides exceeding background are not detected);
- Store excavated materials (interim storage) until final disposition can be determined;
- Collect post-removal samples from excavated pile locations;
- Backfill the excavated locations with clean soil; and
- Restore and revegetate all areas in the WNA impacted by the removal action.

The following timeline is proposed for this work:

- 2005: RAWP and field sampling plan (FSP) completion; and

- 2008: Action Memorandum approved.

Assuming the Action Memorandum is signed as scheduled, and assuming funding for this project is available, the timeline for future activities would be as follows:

- 2008: Fieldwork;
- 2008: Creeks Tailings Removal Action Completion Report (RACR);
- 2009: Ecological Sites Feasibility Study (FS);
- 2010: Ecological Sites Record of Decision (ROD) to establish final remedial actions; and
- 2011: Remedial action implementation, if needed.

The RAWP and FSP for the tailings piles will be completed on a schedule that allows sufficient regulatory and public review before fieldwork begins. The fieldwork must be accomplished during dry weather to avoid unnecessary damage to sensitive habitat, which would be likely to occur during wet months.

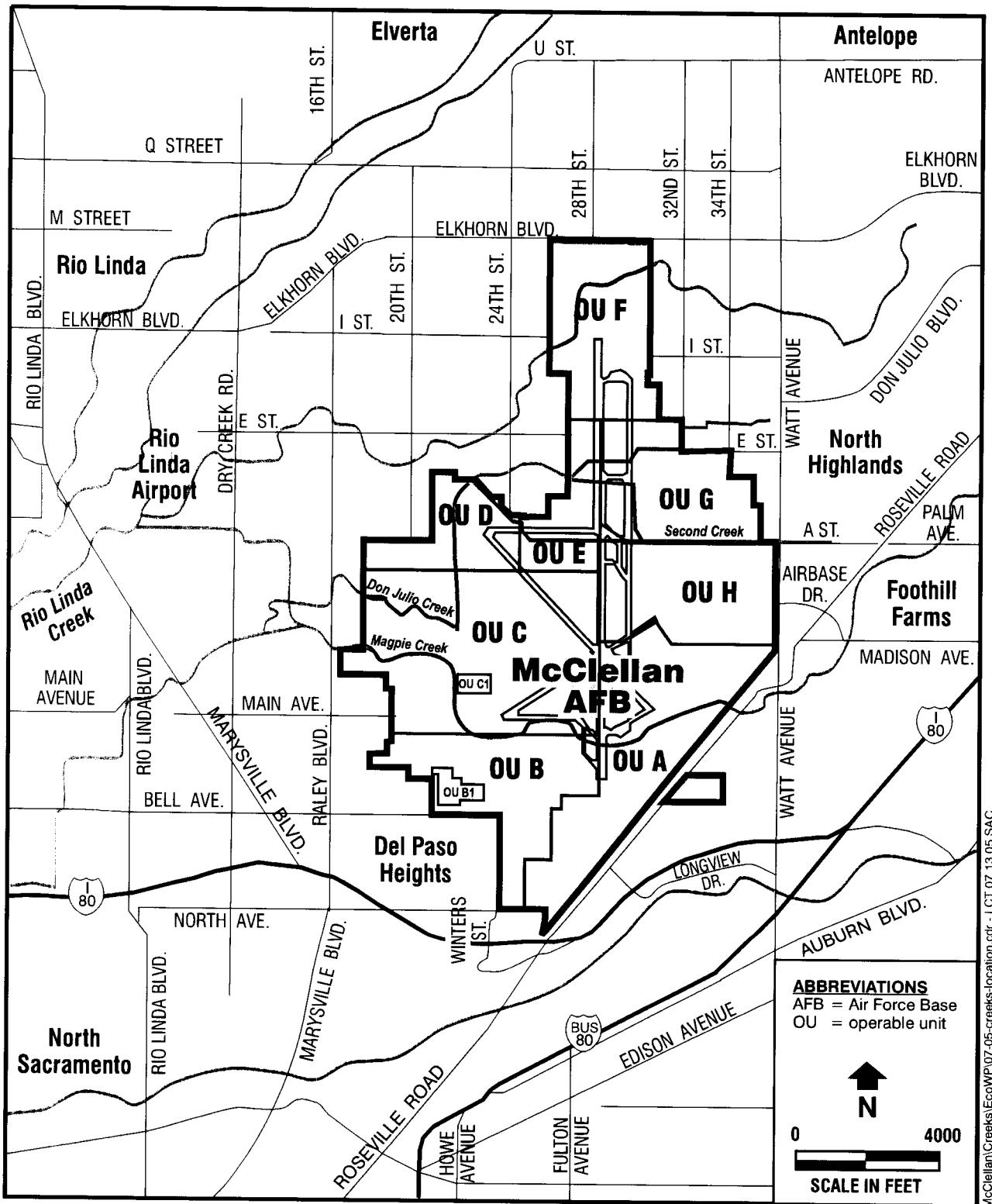


Figure ES-1. Location of McClellan AFB

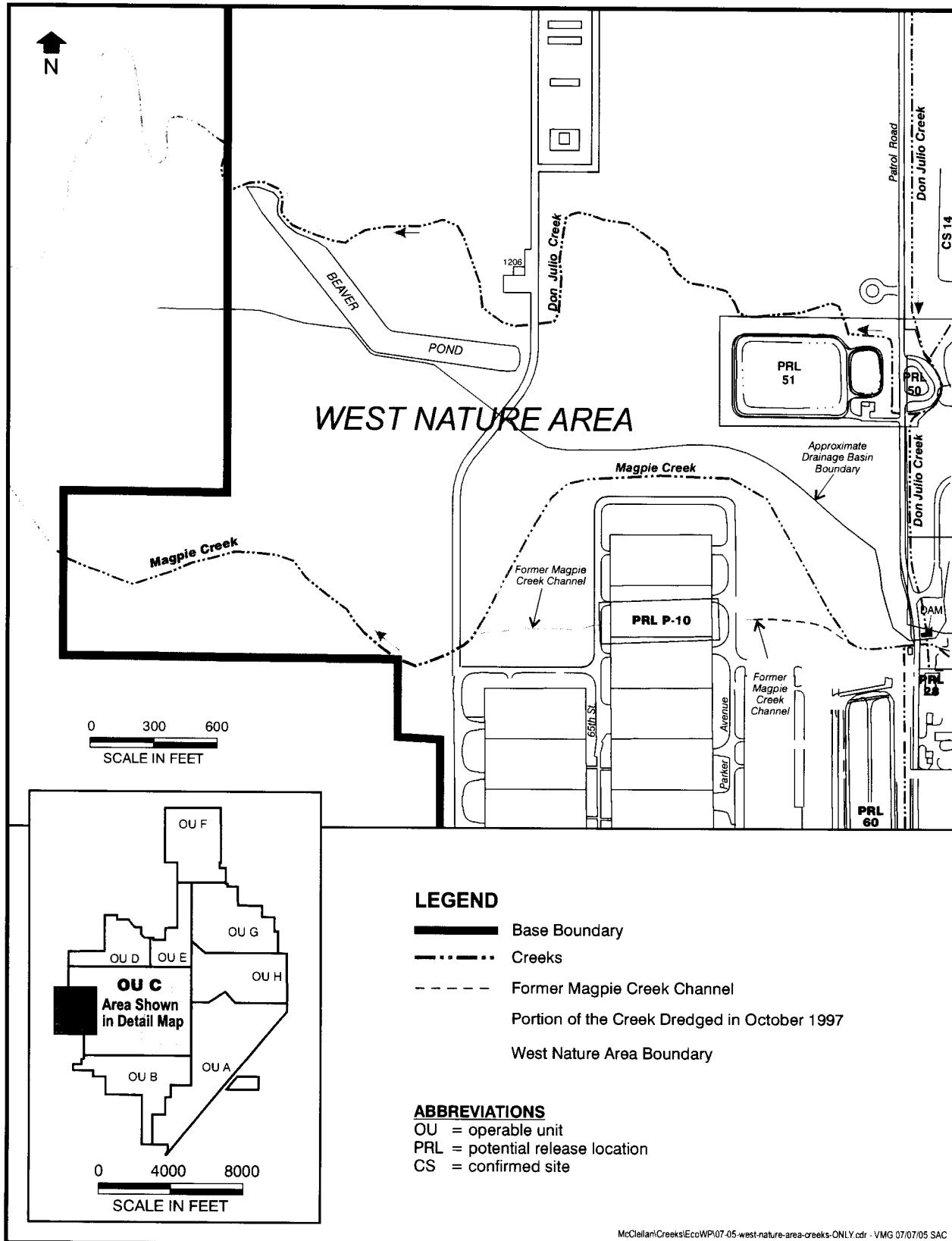


Figure ES-2.
West Nature Area Creeks

**RESPONSES TO COMMENTS ON THE DRAFT FINAL CREEKS TAILINGS REMOVAL ACTION WORK PLAN,
FORMER MCCLELLAN AIR FORCE BASE**

Comment Number	Section	Page	Paragraph	Reviewer	Comment	Response
GENERAL COMMENTS						
1.				EPA (Joseph Healy)	<p>EPA is satisfied with the Air Force's response to our comments on the draft version of the Creek Tailings Removal Action Work Plan/Field Sampling Plan. EPA has no further comments on the subject document.</p> <p>EPA would still like to see this removal action work implemented as soon as possible. My section chief, Shery Lauth, plans to send a letter to the Air Force later this month explaining why EPA wants the Air Force to proceed with the removal action instead of waiting for the work to be conducted under a future ecological sites ROD.</p>	<p>No response required.</p> <p>The Air Force will respond to the referenced letter upon receipt.</p>
GENERAL COMMENTS						
1.				RWQCB	<p>Regional Water Quality Control Board (Regional Board) staff reviewed the subject document (Work Plan), submitted 17 April 2006. The purpose of the Work Plan is to describe the work process that will be used to remove contaminated soil tailings piles along Magpie and Don Julio Creeks in the West Nature Area of the former McClellan AFB. The soil piles were created by a flood control operation performed by the Air Force in 1997, in which soil and sediment were dredged from the creeks and deposited in tailings piles along the upper creek banks. The primary objective of the removal action is to reduce exposures of ecological and human receptors to contaminants in the tailings piles by physically removing the piles. Regional Board staff has reviewed the Work Plan and the Responses to Comments and has determined that our comments on the draft (letter dated 17 February 2006) have been adequately addressed.</p>	<p>No response required.</p>

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GENERAL COMMENTS						
1.				DTSC	With the exception of those comments presented below, DTSC concurs with the response to our comments on the draft RAWP.	No response required.
SPECIFIC COMMENTS						
1.	Previous Response to Comment (RTC) Table	6		DTSC	RESPONSE TO DTSC SPECIFIC COMMENT 1. The response is confusing. Please clarify what you are saying. Note, we maintain there is no "Creeks RICS" and the reference should identify the actual document that is being referenced.	Acknowledged. Previous references to the Creeks RICS document have been changed to the Final Creeks Tailings Removal Action Engineering Evaluation/Cost Analysis (EE/CA) (URS Group, Inc., 2005b) or the Final Creeks Data Gap Analysis and Field Sampling Plan (URS Group, Inc., 2005c) documents, as appropriate. References to sampling data published in the Draft 2 OU C RICS have been removed because the pertinent data are presented in Attachment A-1 to this Final RAWP, which will become part of the Administrative Record.
2.	Previous RTC Table	7		DTSC	RESPONSE TO DTSC SPECIFIC COMMENT 2. If a rejected draft document is the only location where the data are reported, then the data need to be re-published in an accepted document that is placed into regulatory files and the Administrative Record. The Air Force has previously agreed that draft documents should not be utilized as references.	Acknowledged. Please see response to DTSC Specific Comment 1.
3.	Previous RTC Table	7		DTSC	RESPONSE TO DTSC SPECIFIC COMMENT 3. While we believe the response mostly adequate, the Air Force may need to modify the proposed inserted text to be consistent with the attached DHS comments.	Acknowledged. Please see response to CDHS General Comment 1.

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Comment Number	Section	Page	Paragraph	Reviewer	Comment	Response
GENERAL COMMENTS						
1.				DFG-OSPR	<p>The TRVs presented on Attachment A-5.1 for avian and mammalian receptors are as daily dose (mg/kg-d), not as soil concentrations. These values should be used to back-calculate RBSCs with hazard quotient (HQ) of one using the inputs for each species' body weight, food ingestion rate, and proportion of soil in diet. An example of an equation used when incorporating a bioaccumulation (or trophic transfer) factor, rather than a regression model, is displayed below. As available, a regression model for bioaccumulation is preferable, but typically requires a numerical solution because of the logarithmic equation.</p> $RBSC = \frac{1}{(TRC / 10^{-6})^* \left[(IR_{soil} / BW) + (IR_{food} * TTF / BW) \right]}$	<p>The Air Force included Attachment A-5.1 in the Draft Final Copy of the RAWP at the request of DFG-OSPR general comment #1 and specific comment #8. Ecological Toxicity Reference Values (TRVs) were incorporated directly from the Greeks EE/CA and include screening values for soil and sediment, as well as avian and mammalian TRVs. The soil and sediment values are responsive to DFGs comment on the Draft RAWP, which stated that <i>appropriate ecological benchmarks for soil should also be included for comparison</i>. The values presented in Attachment A-5 are suitable as benchmarks for comparison to existing sampling data presented in the RAWP and for screening the potential use of selected backfill soils. The interim removal action is based on removing the physical extent of the piles, plus 1 foot beneath the piles. RBSCs and HQs are not otherwise applicable to the removal action objectives. No changes to Attachment A-5.1 were made.</p> <p>Requirements resulting from formal or informal consultations with the U.S. Fish and Wildlife Service will be followed during removal activities, currently planned for 2008.</p>
2.				DFG-OSPR	<p>Standards may be imposed upon tailings pile removal based upon formal or informal consultations with the U.S. Fish and Wildlife Service. Correspondence from that agency indicates that potential take of ivernal pool fairy shrimp, giant garter snake (GSS), and valley elderberry longhorn beetle (VELB) may occur as a result of the tailings piles removal. Any Federal consultation requirements from that agency should be reflected in the RAWP.</p>	

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SPECIFIC COMMENTS						
1.	Comment 2	23		DFG-OSPR	We commend the Air Force for including a provision for salvaging willow cuttings for winter planting, in addition to implementation of other elements of the revegetation plan.	Comment noted.
2.	3.0	3-1		DFG-OSPR	<p>We appreciate the willingness of the Air Force to consider our ARARs relative to nesting birds by delaying the onset of work activities as late as practicable. We have the following additional concerns relative to this section:</p> <ul style="list-style-type: none"> • The 1998 delineation of the tailings pile boundaries may no longer be accurate due to rain-induced soil erosion into perimeter areas. The stated estimate of 56,000 square feet for the total footprint of the tailings pile contamination should be confirmed by recent determinations using GPS units and appropriate software. 	<p>The objectives of this project were established with the regulatory agencies based on the GPS data collected in 1998. The physical extent of these piles was more visible at that time because they had only one season of re-growth. Most of any rain-induced erosion probably occurred during the El Nino winter of 1997–1998, prior to the GPS survey. The piles are currently heavily revegetated and are now more difficult to distinguish from the native soil. Thus, further GPS surveying is not expected to provide more accurate information and does not appear warranted at this time. The square footage is an approximate figure, rounded upward, and is expected to represent the maximum potential square footage of the project footprint.</p> <p>The tailings piles to be removed are detailed and shown in purple on Figure 3-1. The tailings piles scheduled to be left in place because of their locations adjacent to sensitive areas are depicted in red. The 1,300 cubic yards of tailings identified in red will remain in place.</p> <ul style="list-style-type: none"> • It would also be helpful if there was an enumeration of which tailings piles are to be removed, based upon which piles are considered to be in sensitive areas. This could include an update of the Site Map in Figure 3-1 to show any tailings piles which comprise the 1,300 cubic yards of tailings to be removed later.

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3.	Table A-1.2	A1-15		DFG-OSPR	For chemicals with a listed concentration of zero, please change the value for concentration to “non-detect (ND)” with the method detection limit (MDL) (e.g., ND < 0.5).	<p>As requested, detection limits for individual analytes with non-detect (zero) results were added to Table A-1.2. Where Total PCB equals zero, the concentration was revised to ND, similar to the “All Pesticides” data. A summary of data added follows:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="3">Concentration</th> </tr> <tr> <th>Location</th> <th>Depth</th> <th>Analyte (µg/kg)</th> </tr> </thead> <tbody> <tr> <td>DICRMS013</td> <td>0</td> <td>PCB-1260 <3.65</td> </tr> <tr> <td>DICRMS015</td> <td>0</td> <td>PCB-1260 <3.84</td> </tr> <tr> <td>DICRMS016</td> <td>0</td> <td>PCB-1260 <3.71</td> </tr> <tr> <td>DICRMS019</td> <td>0</td> <td>PCB-1260 <6.09</td> </tr> <tr> <td>DICRMS021</td> <td>0</td> <td>PCB-1260 <4.07</td> </tr> <tr> <td>DICRSC007</td> <td>0</td> <td>PCB-1260 <3.28</td> </tr> <tr> <td>MPCRMS005</td> <td>0</td> <td>PCB-1260 <5.81</td> </tr> <tr> <td>DICRHAA006</td> <td>1.5</td> <td>Total PCB ND</td> </tr> <tr> <td>DICRHAA007</td> <td>0</td> <td>Total PCB ND</td> </tr> <tr> <td>DICRHAA009</td> <td>0</td> <td>Total PCB ND</td> </tr> <tr> <td>DICRHAA010</td> <td>0.5</td> <td>Total PCB ND</td> </tr> <tr> <td>DICRHAA014</td> <td>0.5</td> <td>Total PCB ND</td> </tr> <tr> <td>DICRHAA015</td> <td>0</td> <td>Total PCB ND</td> </tr> <tr> <td>DICRHAA015 FD</td> <td>0.5</td> <td>Total PCB ND</td> </tr> <tr> <td>DICRHAA016</td> <td>1.5</td> <td>Total PCB ND</td> </tr> <tr> <td>DICRHAA017</td> <td>1.5</td> <td>Total PCB ND</td> </tr> <tr> <td>DICRHAA019</td> <td>1.5</td> <td>Total PCB ND</td> </tr> <tr> <td>DICRHAA020</td> <td>0.5</td> <td>Total PCB ND</td> </tr> <tr> <td>DICRHAA027</td> <td>0.5</td> <td>Total PCB ND</td> </tr> <tr> <td>MPCRHA002</td> <td>1.5</td> <td>Total PCB ND</td> </tr> <tr> <td>MPCRHA004</td> <td>0.5</td> <td>Total PCB ND</td> </tr> </tbody> </table>	Concentration			Location	Depth	Analyte (µg/kg)	DICRMS013	0	PCB-1260 <3.65	DICRMS015	0	PCB-1260 <3.84	DICRMS016	0	PCB-1260 <3.71	DICRMS019	0	PCB-1260 <6.09	DICRMS021	0	PCB-1260 <4.07	DICRSC007	0	PCB-1260 <3.28	MPCRMS005	0	PCB-1260 <5.81	DICRHAA006	1.5	Total PCB ND	DICRHAA007	0	Total PCB ND	DICRHAA009	0	Total PCB ND	DICRHAA010	0.5	Total PCB ND	DICRHAA014	0.5	Total PCB ND	DICRHAA015	0	Total PCB ND	DICRHAA015 FD	0.5	Total PCB ND	DICRHAA016	1.5	Total PCB ND	DICRHAA017	1.5	Total PCB ND	DICRHAA019	1.5	Total PCB ND	DICRHAA020	0.5	Total PCB ND	DICRHAA027	0.5	Total PCB ND	MPCRHA002	1.5	Total PCB ND	MPCRHA004	0.5	Total PCB ND
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4.	Table A-1.2	A1-25		DFG-OSPR	Please check whether the 1999 sample results for total polychlorinated biphenyls are in µg/kg as listed, or actually in mg/kg.	The PCB results from the 1999 samples are correctly presented as µg/kg.																																																																					

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5.	Table A-1.3	A1-33		DFG-OSPR	The reference and the values used for the tetrachlorodibenzo-p-dioxin (TCDD) equivalents should be included as footnotes to this table.	A reference to the World Health Organization (WHO) 1997 source for the TCDD equivalents has been added as a footnote to Table A-1.3. The full reference has been added to Section 6.0 as follows: <i>World Health Organization (WHO), 1997, from van Leeuwen, F.X.R., 1997. Derivation of Toxic Equivalency Factors (TEFs) for Dioxin-like Compounds in Humans and Wildlife Organohalogen Compounds, pp. 34-237.</i> The value for each dioxin congener toxicity equivalency factor (TEF) has not been added per standard reporting practices.
6.	Tables 8-14 and 8-26	A3-5 to A3-8		DFG-OSPR	The first table for Method 8082 is in units of mg/kg, whereas the second table for Method 1668 is in µg/kg. Please present data in both tables in µg/kg to provide consistency and ease in comparing between the two methods.	Attachment A-3, Tables 8-14 and 8-16, were copied directly from the Basewide QAPP (URS Group, Inc., 2003). Table 8-16 for Method 1668 contains only one numeric Quantitation Limit for all PCB congeners of 0.000002 µg/kg. This is easily converted to 0.002 mg/kg, for comparison to the detection limits for PCBs by Method SW8082 in Table 8-14, expressed in mg/kg. Converting all the data in Table 8-14 into µg/kg appears unwarranted.
7.	Table A-5.1	A5-1		DFG-OSPR	Please refer to the general comment above regarding the need to convert the daily dose TRVs (mg/kg-d) to back-calculated RBSC that are protective of birds and mammals.	Please see response to DFG-OSPR General Comment 1.
GENERAL COMMENTS						
1.	Previous RTC Table			CDHS	Response to CDHS Specific Comments 1, 2, 3, 4, CDHS Supplemental Comments 1 and 2, Figure 3-2 on Page 3-8, Section 3.2.4.2 on Page 3-7, Page 3-9 first paragraph and Table 3-3:	See responses below.

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FORMER MCCLELLAN AIR FORCE BASE**

Comment Number	Section	Page	Paragraph	Reviewer	Comment	Response
					<p>The above comment responses and sections of the document being reviewed attempt to use action levels established for characterization sampling decisions in the cited document, <i>Existing CERCLA Sites Sampling and Analysis Plan (Cabrera Services, 2005)</i>, as soil segregation limits and state that these are the Air Force established radionuclide-specific action levels for solid matrices at McClellan AFB. The response to CDHS Comment 4 goes on to state that these action levels were developed in coordination with the regulatory agencies to support the evaluation of radiological sampling results during ongoing RI efforts, including the airfield radiological investigation and the existing CERCLA sites radiological investigation.</p>	<p>The following response supersedes the former response to CDHS Comment 4 on the DRAFT RAWP:</p> <p>In the context of this RAWP, the “action levels” will be used only for soil segregation. The tailings will be analytically screened in accordance with the segregation scheme presented in Figure 3-2 and will be taken either to the Confirmed Site (CS) 10 weatherization tent or to an appropriate disposal facility. Before any soil is taken off site for disposal, the analytical results will be provided to the disposal facilities so that they can decide whether they can accept the soil.</p>
1. (cont'd)	Previous RTC Table			CDHS	<p>First, the other FSP documents noted use these levels as action levels for continuation of characterization sampling efforts. These levels were never agreed upon or coordinated with regulatory agencies for use in determining whether or not background levels were exceeded or for use in segregation of soil. Clearly some of the levels in Table 3-3 are above background levels and the rest are at the high end of the background distribution. While values such as those stated in Table 3-3 may be appropriate for determining where to stop a phase of characterization sampling or as an action level for stopping a removal action phase to avoid unnecessary sampling or disposal, they cannot stand alone as acceptable action levels for determination that background levels are not exceeded. CDHS does not concur with the use of the values in Table 3-3 as described in this document.</p>	<p>As stated above and in recent discussions, the segregation levels in Table 3-3 will not be used to determine whether background levels are exceeded. These levels will be used only for the segregation of excavated soils. The extent of the tailings piles of excavations are already established and are not dependent on sampling results; therefore, no comparison to background levels will be performed during this phase of work.</p>

**RESPONSES TO COMMENTS ON THE DRAFT FINAL CREEKS TAILINGS REMOVAL ACTION WORK PLAN,
FORMER MCCLELLAN AIR FORCE BASE**

Comment Number	Section	Page	Paragraph	Reviewer	Comment	Response
1. (cont'd)	Previous RTC Table	CDHS	Section 3.2.4.2 on Page 3-7 states that the purpose of the segregation sampling is to meet the license requirements for the storage of radiologically contaminated soils in CS-10 and to meet disposal criteria required by the waste disposal facility. The top of Page 3-9 goes on to say that the values in Table 3-3 are "based on action levels for licensable material". These discussions of license requirements for CS-10 and action levels for licensable material need further clarification and support by references or documentation.	The text in Section 3.2.4.2 on page 3-7 was revised to clarify the disposal facility requirements as follows: <i>The soil in the tailings piles will be segregated for storage in the CS 10 weatherization tent or for off-site disposal using the decision process shown on Figure 3-2. The purpose of the segregation sampling is to ensure the maximum activity levels as specified in the USAF Radioactive Material Permit No. CA-00605-01/00AAPP, Docket No. 030-00605 for CS 10 (Appendix E) are not exceeded, and to profile waste for potential disposal facilities.</i> The text on page 3-9 has been changed to clarify the permit requirements for CS 10 to read as follows: <i>The waste categorization and profiling criteria for radiological contaminants is designed to meet the requirements of USAF Radioactive Material Permit No. CA-00605-01/00AAPP, Docket No. 030-00605 (included as Appendix E of this document) and the profiling requirements of the potential disposal facilities. Samples will be analyzed for the five radionuclides specified in Table 3-3. If concentrations exceed the action levels listed in Table 3-3, they will be segregated and/or disposed of in accordance with the decision logic shown on Figure 3-2.</i>		
					Given the above misunderstandings or misinterpretations, it appears that significant revisions to the Draft Final document will be needed and that this may lead to need for a Draft Final 2 version of the document.	Based on discussions to clarify these comments and responses, it was agreed between the AF and CDHS that a Draft Final 2 document was unnecessary.